
Name of Organization: The Nature Conservancy

Type of Organization: Other

Contact Information: Dr. Mary Willson

Great Lakes Program

8 S. Michigan Ave., Suite 2301

Chicago IL 60603

Phone: (312) 759 - 8017 **Extension:** 20

Fax: (312) 759 - 8409

E-Mail: mwillson@tnc.org

Project Title: Breeding bird habitat in northern Great Lakes forests

Project Category: Habitat (Ecological) Protection and Rest

Rank by Organization (if applicable): 2

Total Funding Requested (\$): 30,360 **Project Duration:** 1 Years

Abstract:

This proposal constitutes a critical precursor to a proposal, to be submitted to GLNPO by Robert Howe (University of Wisconsin - Green Bay) and Gerald Niemi (University of Minnesota - Duluth, Natural Resources Research Institute), that has the ultimate goal of mapping high-priority conservation areas for breeding birds in northern Great Lakes forests (MN, WI, MI). This goal will be achieved by building 1) accurate habitat models for identifying sites of high breeding bird diversity in this region and special habitats for targeted species, where conservation efforts are likely to be most effective; 2) a framework for predicting the impacts of anticipated changes in land cover (due to forestry, development, etc.); and thereby 3) filling gaps identified during the Conservancy's Great Lakes ecoregional planning initiative for important conservation sites for breeding birds. The present proposal provides three kinds of essential information to support the main Howe-Niemi proposal: 1) information on habitat use of RARE species, which by definition are poorly represented in existing databases; 2) data that link understory structure to remotely measured landcover images (canopy cover); and 3) improvement of existing rough models of habitat use by the incorporation of finer-resolution LandSat data and point-count data (in place of Breeding Bird Surveys) for avian abundances. With these critical precursors, the larger proposal will yield a comprehensive map and a set of predictive habitat-use models that can be used to assess the impact of land use changes on breeding birds across the northern Great Lakes area and to identify sites to be integrated into the Conservancy's Great Lakes ecoregional plan and Great Lakes conservation efforts.

Geographic Areas Affected by the Project

States:

<input type="checkbox"/> Illinois	<input type="checkbox"/> New York
<input type="checkbox"/> Indiana	<input type="checkbox"/> Pennsylvania
<input checked="" type="checkbox"/> Michigan	<input checked="" type="checkbox"/> Wisconsin
<input checked="" type="checkbox"/> Minnesota	<input type="checkbox"/> Ohio

Lakes:

<input checked="" type="checkbox"/> Superior	<input type="checkbox"/> Erie
<input checked="" type="checkbox"/> Huron	<input type="checkbox"/> Ontario
<input checked="" type="checkbox"/> Michigan	<input type="checkbox"/> All Lakes

Geographic Initiatives:

<input type="checkbox"/> Greater Chicago	<input type="checkbox"/> NE Ohio	<input type="checkbox"/> NW Indiana	<input type="checkbox"/> SE Michigan	<input type="checkbox"/> Lake St. Clair
--	----------------------------------	-------------------------------------	--------------------------------------	---

Primary Affected Area of Concern: Not Applicable

Other Affected Areas of Concern: may overlap geographically with some AOC's

For Habitat Projects Only:

Primary Affected Biodiversity Investment Area: Lake Superior Highlands/Isle Royale

Other Affected Biodiversity Investment Areas: Bad River Watershed/Bayfield Peninsula, Keweenaw Peninsula, Grand Sable Dunes, Mackinac-Manitoulin, Green Bay Western Shore, Door County Peninsula

Problem Statement:

The north-western Great Lakes region has an extraordinary amount of information on avian distribution and abundance, compared to other areas, and databases of land cover are increasingly detailed and available. The ultimate goal of completing large-scale maps of high-priority breeding-bird conservation areas in this region and defining accurate species-habitat models aimed at identifying new localities where target species are likely to occur depends, however, on filling three critical gaps in the available information with the present proposal: 1) Data on habitat use of rare species. By definition, rare species provide little ready information from ordinary surveys. By focusing particularly on rare species in wooded habitats (e.g., olive-sided flycatcher, Canada warbler, black-throated blue warbler, Connecticut warbler, Cape May warbler, black-and-white warbler) and wetlands (e.g., American bittern, yellow rail, sedge wren), it becomes possible to document their patterns of habitat use, so they can then be included in the detailed habitat models and the map. 2) Use of the now-available satellite imagery and GIS databases for land cover represents CANOPY cover but does not reflect the structure of the understory where many birds breed (e.g., black-throated blue warbler, Canada warbler, golden-winged warbler, wood thrush). What is needed are data linking tree cover (e.g., Forest Service timber assessment data) to understory vegetation. 3) Existing models of habitat use have a relatively crude level of resolution (ca. 1.1km x 1.1km for land cover) and only scattered Breeding Bird Survey data. As a result, they are frequently incongruent with known species distribution patterns. This project will improve the models by using point-count data for birds and fine-resolution (<100m x 100m) LandSat data, which are currently available for two areas of intensive bird census work (Superior-Chippewa National Forest in Minnesota, Nicolet National Forest in Wisconsin). As new LandSat data sources become available, results from the high-resolution habitat-use models can be applied over broader geographic areas in MN, WI, MI.

The proposed project, in combination with the Howe-Niemi proposal, provides much needed information to contribute to the development of the indicator for "Breeding Bird Diversity and Abundance" (indicator 8150). This work also overlaps with several Biodiversity Investment Areas and will help to direct habitat conservation priorities therein.

Proposed Work Outcome:

This proposal is focused on filling the three information gaps that are the necessary precursors to successful completion of the Howe-Niemi proposed work: Gap 1) Identify currently known localities used by rare species (data from state Natural Heritage programs, breeding bird atlases, monitoring studies), measure quantitative variables at these locations to refine predictive habitat models based on land-cover data, use the predictive models to identify new localities where targeted rare species are likely to occur, and census the predicted locations for occurrence of these rare species. Gap 2) Understory structure (shrub density, % cover of ground vegetation, density of logs, bare rock, standing water, and other special features) will be measured and related to USFS timber assessments and measurements of canopy cover, using standard methods of vegetation sampling. Understory data will then be added to existing and fine-resolution land-cover information

and the resulting habitat models examined for the effect of understory structure on model improvement. In addition, interpretation of satellite images and air photos (for canopy cover) can be improved with respect to avian habitat use, because remotely-measured variables can be related to variables measured on the ground. Gap 3) Use fine-scale Land Sat data with point-count data on avian abundance to create accurate habitat models for selected areas, using statistical methods already developed. The Howe-Niemi proposal will then use the improved models for predicting avian distribution and abundance across the northern Great Lakes area.

Since the purpose of this project is to aid in the identification of high-priority conservation sites for breeding birds, we cannot know the number of acres that could be positively impacted until this and the Howe-Niemi project are complete.

Project Milestones:

Dates:

Project Start

05/2000

/

/

/

/

/

/

Project End

05/2001

Project Addresses Environmental Justice

If So, Description of How:

While this preproposal does not specifically target environmental justice issues, it would provide important information for environmental justice initiatives who share similar conservation goals with the Conservancy. The Conservancy could provide information on priority sites for breeding birds to conservation partners who are working to protect areas where environmental justice concerns coincide with important biodiversity areas.

Project Addresses Education/Outreach

If So, Description of How:

High priority conservation areas for breeding birds in the northern Great Lakes forests will be incorporated into the Conservancy's Great Lakes ecoregional plan for the conservation of biological diversity. Information will be shared with the Conservancy's field offices in the Great Lakes states as well as with other partners including the US Forest Service, state DNRs, EPA, US Fish and Wildlife Service, local Audubon chapters and land trusts. Project outcomes will inform the work of the Conservancy's community-based conservation programs that are located in Northeast Minnesota, Kakagon Sloughs, and the Upper Peninsula of Michigan.

We also expect to publish scientific papers (for Gaps 1,2) to reach conservation scientists and practitioners across the Great Lakes region and the continent. Information for all three gaps will be incorporated into the proposed Howe-Niemi work, and the overall results of these combined efforts will enable the Conservancy and other conservation partners to direct time and resources to protecting high priority sites for breeding birds in the Great Lakes.

Project Budget:

	Federal Share Requested (\$)	Applicant's Share (\$)
Personnel:	16,436	0
Fringe:	6,164	0
Travel:	2,500	3,000
Equipment:	200	0
Supplies:	0	0
Contracts:	0	0
Construction:	0	0
Other:	0	0
Total Direct Costs:	25,300	3,000
Indirect Costs:	5,060	0
Total:	30,360	3,000
Projected Income:	0	0

Funding by Other Organizations (Names, Amounts, Description of Commitments):

Matching funds to come from student proposals to other funders.

Description of Collaboration/Community Based Support:

This proposal represents a collaboration of M. F. Willson (The Nature Conservancy's Great Lakes Program), R. W. Howe (University of Wisconsin-Green Bay), and G. Niemi (University of Minnesota- Duluth, Natural Resources Research Institute). Designated and potential consultants include faculty at University of Wisconsin-Madison and Michigan Technological University, the Science Director of TNC-Michigan Chapter, and USFS ecologists.